Estimation of Effective Radiation Dose Following Computed Tomography Urography at Aminu Kano Teaching Hospital, Kano Nigeria

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Abstract : Background: CT urography (CTU) is efficient radiological examination for the evaluation of the urinary system disorders. However, patients are exposed to a significant radiation dose which is in a way associated with increased cancer risks. Objectives: To determine Computed Tomography Dose Index following CTU, and to evaluate organs equivalent doses. Materials and Methods: A prospective cohort study was carried at a tertiary institution located in Kano northwestern. Ethical clearance was sought and obtained from the research ethics board of the institution. Demographic, scan parameters and CT radiation dose data were obtained from patients that had CTU procedure. Effective dose, organ equivalent doses, and cancer risks were estimated using SPSS statistical software version 16 and CT dose calculator software. Result: A total of 56 patients were included in the study, consisting of 29 males and 27 females. The common indication for CTU examination was found to be renal cyst seen commonly among young adults (15-44yrs). CT radiation dose values in DLP, CTDI and effective dose for CTU were 2320 mGy cm, CTDIw 9.67 mGy and 35.04 mSv respectively. The probability of cancer risks was estimated to be 600 per a million CTU examinations. Conclusion: In this study, the radiation dose for CTU is considered significantly high, with increase in cancer risks probability. Wide radiation dose variations between patient doses suggest that optimization is not fulfilled yet. Patient radiation dose estimate should be taken into consideration when imaging protocols are established for CT urography.

Keywords : CT urography, cancer risks, effective dose, radiation exposure

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